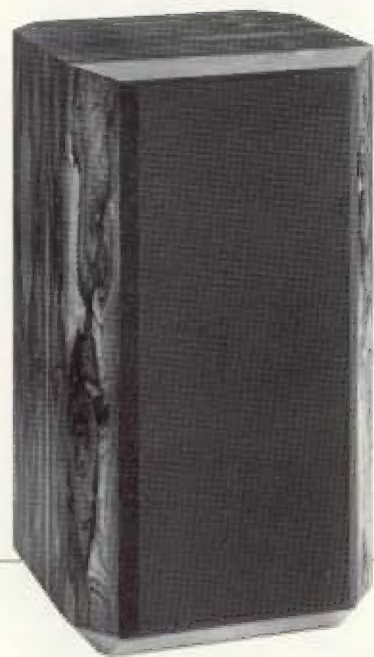
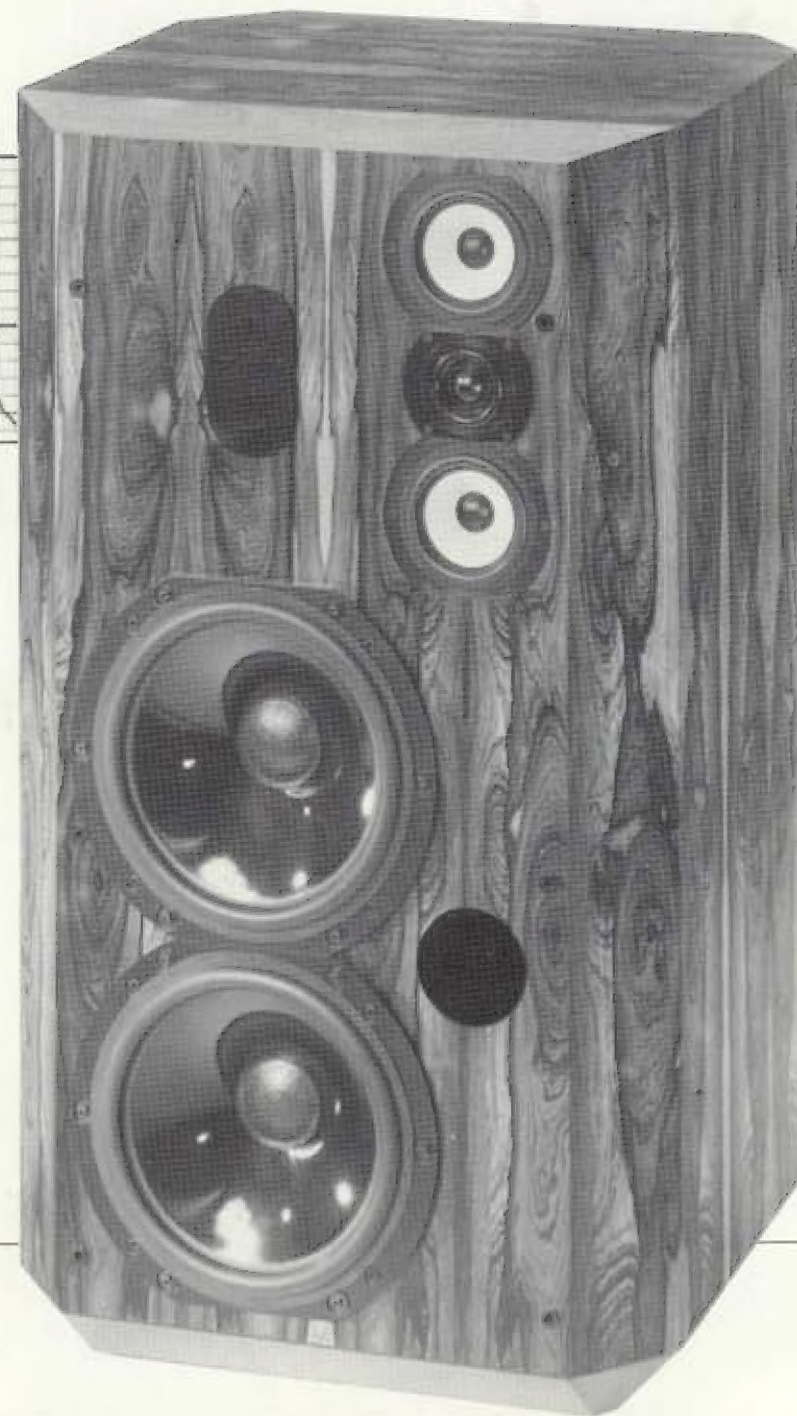


B&W MODEL 808

PERFECTION TO 120dB



Instruction Manual



Introducing Model 808

Model 808 is B&W's response to the demand for a system capable of safely delivering sound pressure levels up to 120dB. The same basic sophistication of 801F/S – now regarded as the professional standard monitoring loudspeaker worldwide – but incorporating a whole range of new design concepts and techniques.

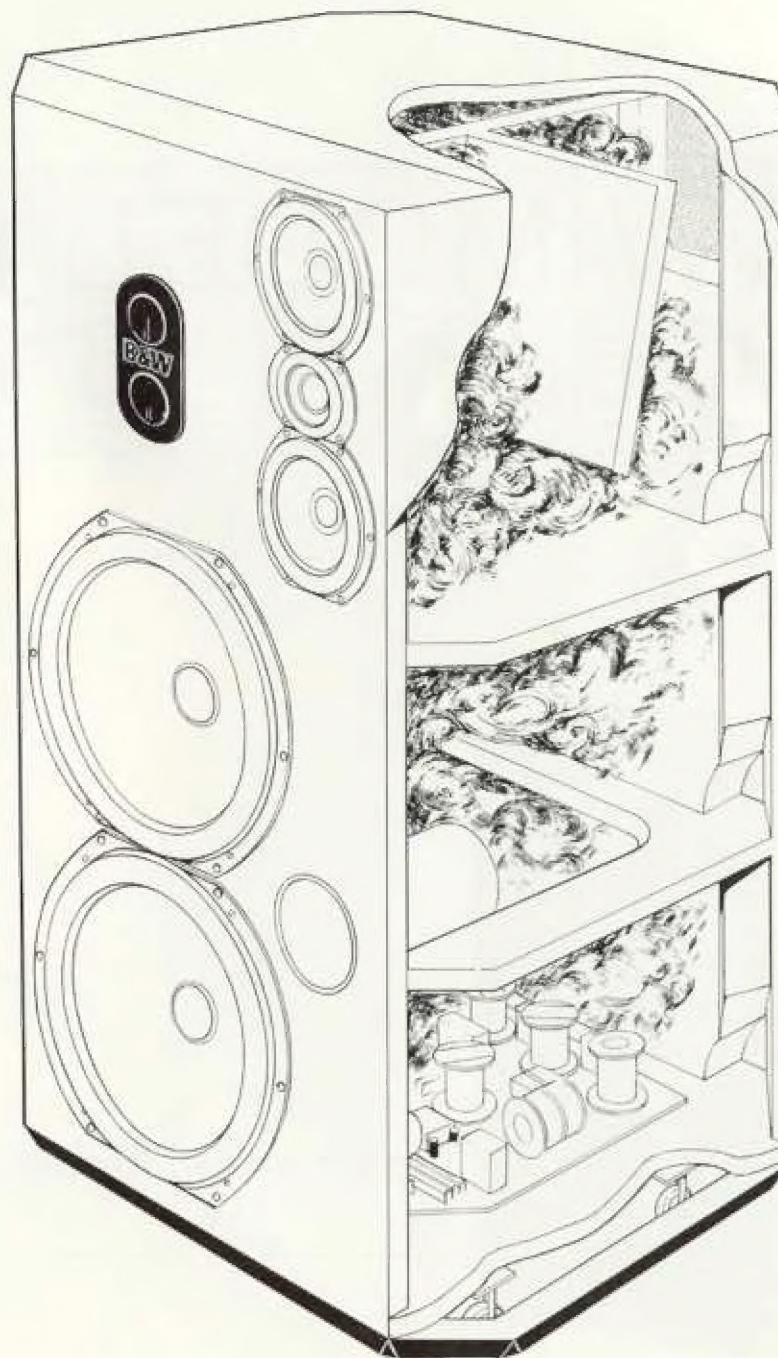
808 is a five-driver, three-way system with sensitivity double that of 801F/S, and overall frequency linearity free from colouration and distortion, providing both the professional recording engineer and the dedicated home user with the particular requirements for producing realistic sound levels in a large environment.

WARNING

Because Model 808 is capable of such high sound pressure levels, permanent hearing damage can result from a daily exposure duration longer than these examples:

120dB 30 seconds, 110dB 4 minutes,

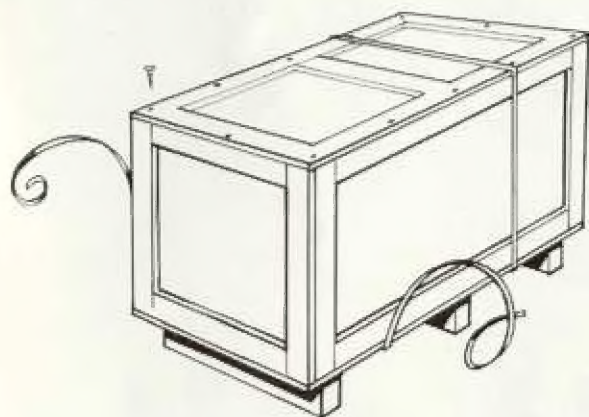
100dB 30 minutes, 90dB 8 hours,



Unpacking

To avoid damaging the loudspeaker when removing from the outer case, it is important to follow these instructions carefully.

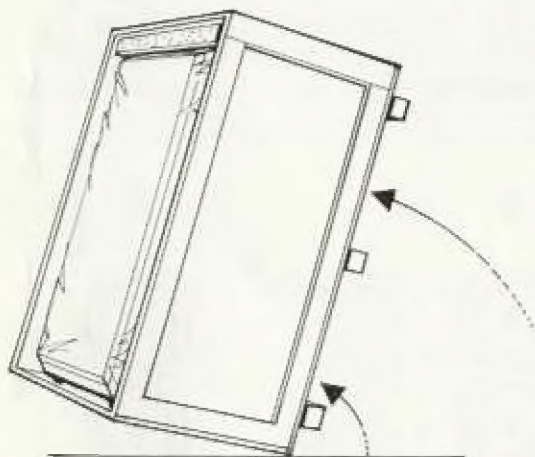
1. Stand the case on its bearers. Remove the strapping, unscrew the lid and lift off.



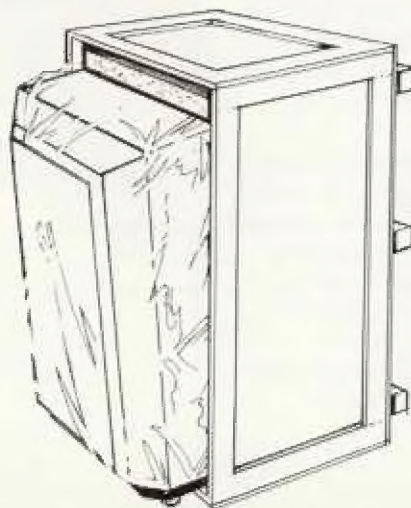
2. Remove the three foam packing pieces from loudspeaker sides and bottom, but leave the packing at the top.



3. Stand the case upright.



4. Gently ease the loudspeaker from the case and remove plastic cover.



Electrical Connection

Connect the loudspeaker to your amplifier by means of either the screw terminals or 4mm plugs. The red terminal on the loudspeaker should be connected to the red terminal on the amplifier, or the connection marked positive. Correct phasing of stereo loudspeakers is extremely important and incorrect connection will produce a loss of bass and a poor stereo image. This will be rectified by reversing the connections to one of the loudspeakers.

It is good practice to keep the connecting leads between the power amplifier and speakers as short as possible, and to use a heavy gauge wire to keep the DC resistance to a minimum.

It will be appreciated that the input to the loudspeaker is of complex impedance, and when your system is operating at high levels very high currents will be carried by the inter-connecting cables.

Considerable work has been carried out in recent years on the effect of different cables, and there is fairly conclusive evidence to show that, although subtle, these differences are apparent. We would recommend, therefore, that if cable lengths exceed 2 metres care should be taken over their choice, and in any event it is good engineering practice to employ really heavy gauge cables of the highest quality.

Bi- and tri-amplification

In order to facilitate bi- or tri-amplification, the inputs to each individual filter section (low-frequency, midrange, high-frequency) have been brought out to three separate terminals. No electronic crossover is required.

With normal operation using a single amplifier, shorting links are provided which parallel the input terminals, and the amplifier may therefore be connected to any of these terminals.



Obviously with tri-amplification separate amplifiers will be used for each section, but the more usual and recommended system would be bi-amplification where the larger of the two amplifiers is used for the bass section, and the smaller amplifier for the midrange and treble sections which are then connected in parallel with one pair of the shorting links provided.

The Listening Room and Positioning Your Loudspeakers

Environmental Controls

In professional applications the acoustics will be well controlled. Domestic listening rooms however do vary widely both in their acoustics and in the positioning preferred to operate the loudspeakers.

For this reason, control has been provided for both the midrange and high-frequency sections with precision-switched attenuators. The resulting characteristics are shown in the plots below (fig. 1).

In terms of professional application, Model 808 provides linear extension of free-field response to 30Hz, as this characteristic is ideal for a controlled environment with particular reference to digitally recorded material. In less well controlled domestic environments, however, some attenuation of the bass extension may be desirable, and an electronic bass contour control unit is in the process of development.

The driver configuration in Model 808 has been deliberately conceived as a mirror-image pair, with the midrange/high-frequency assemblies offset from the vertical centre line of the cabinet. This configuration gives an asymmetrical polar characteristic relative to the centre axis of the loudspeaker and can help in improving stereo imagery.

It is perfectly acceptable to position the loudspeakers so that these assemblies are more

closely or more widely spaced. As a general rule, if the loudspeaker placing is relatively wide then the pairing should be such that the assemblies are adjacent (fig. 2). Conversely, if closely spaced, they can be further apart (fig. 3).

Both the listening room and positioning your loudspeakers within the room will widely influence the tonal balance and stereo information you receive. Choice of a listening room is often restricted but if you are able to choose, the following points may be helpful.

All enclosed volumes exhibit resonances which, in the case of the listening room, will be essentially determined by the distance between parallel surfaces. The strongest resonances will lie between 30Hz and 180Hz in average domestic room sizes.

The most unsuitable listening room would be one where all dimensions (wall spacing and ceiling height) are similar, since all resonances occur over a narrow band of frequencies. Rooms where all dimensions are different give the most even and natural bass response.

Protuberances and larger items of furniture tend to break up these resonances and, where practical, varying the position of such items can often favourably influence sound reproduction.

Soft furnishings, wall coverings and even pictures influence

middle and high frequencies. Ideally you should aim to avoid discrete resonances or 'ringing', and an easy test for this problem is a simple hand-clap. If resonances exist there will be a distinct 'overhang' or sustaining of the response which could last between 0.5 and 1 second.

A bookcase, placed on a wall opposite a reflective surface such as a window, will often help to alleviate the problem outlined above. Alternatively, a panel of acoustic tiles placed on a wall can produce a remarkable improvement.

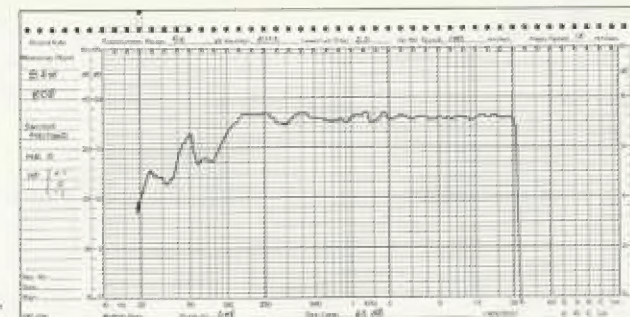
In all B&W designs the configuration of the drive units and the characteristic of the crossover network are so designed that the horizontal dispersion of the sound is broader than the vertical dispersion, thus ensuring wider freedom of seating with accurate stereo information. Figs. 4 & 5.

The actual position of your loudspeakers within the listening room can widely influence sound reproduction. Two typical positions are shown in figs. 6 & 7.

The environmental measurements, fig. 8, show the wide variation which can be achieved by loudspeaker positioning. We cannot emphasise too strongly that time spent in experimenting with the position of your loudspeakers is invariably worthwhile.

FIG. 1

Switch position:
Midrange '0'.
High frequency '+1', '0', '-1'.



Switch position:
High-frequency '0'.
Midrange '+1', '0', '-1'.

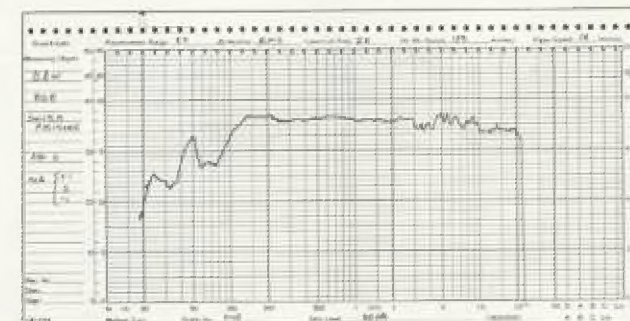


FIG. 2

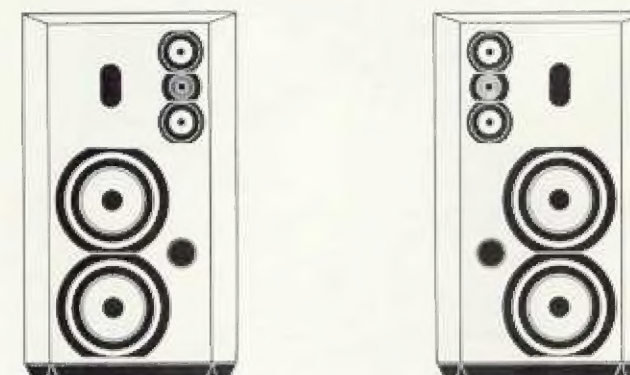


FIG. 3

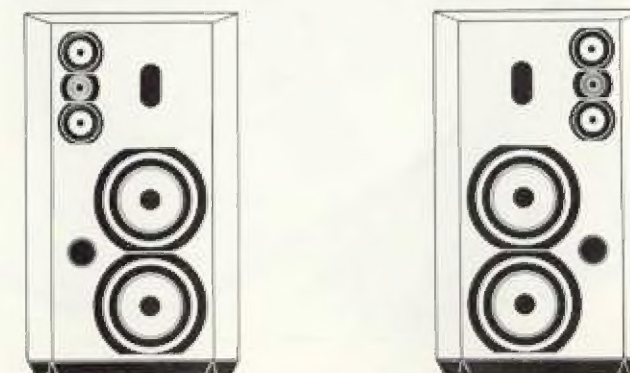


FIG. 4

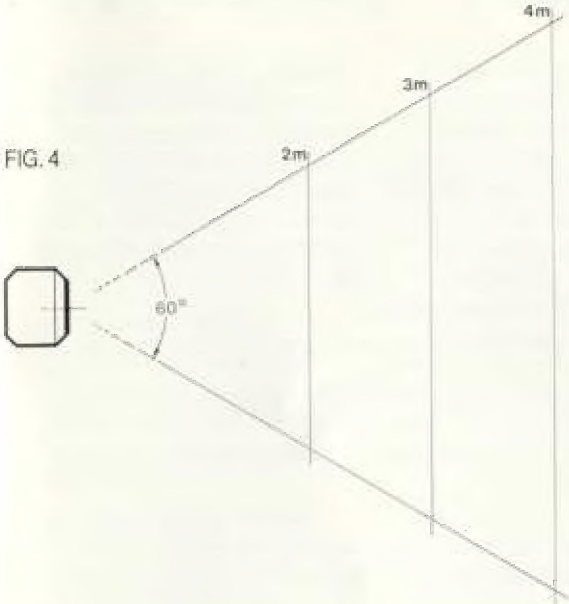


FIG. 5

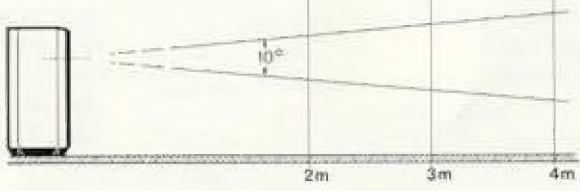


FIG. 6

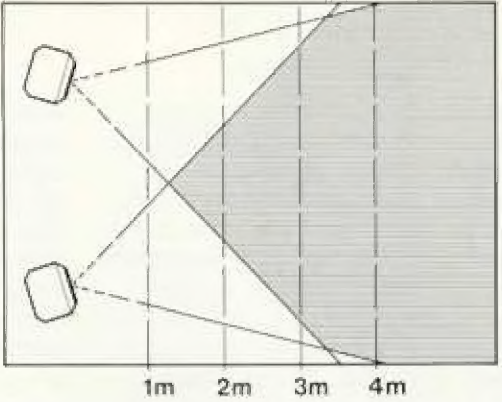


FIG. 7

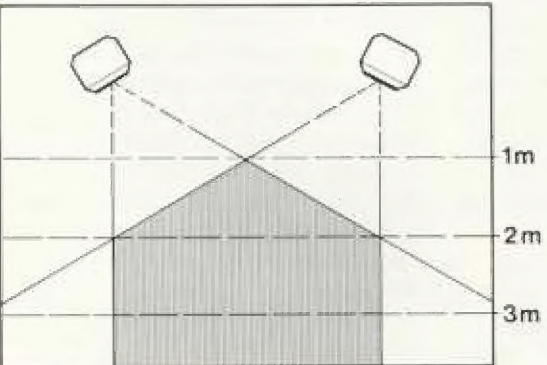


FIG. 8



Overload Protection

B&W were the first major loudspeaker manufacturer in the world to introduce full electronic protection against damage and overload to their loudspeakers. APOC (audio powered overload circuit).

In Model 808, this protection is fitted individually to the midrange and high-frequency drivers. Should a thermal or transient overload condition occur, drive will be automatically removed from the appropriate unit and the LED will show until the fault condition is removed. The loudspeaker will then automatically return to normal operation.

The voice coils in 808 have been designed to withstand temperatures in excess of 250°C. Mechanical clearances also ensure that peak excursions cannot damage the bass driver voice coils. Therefore, to reduce insertion loss APOC is omitted from the bass section. However, some caution should be observed with amplifiers of over 600 watts per channel.

Ancillary Equipment

As a discriminating listener, you will not have chosen your 808 loudspeakers without thorough preliminary listening tests. You will have discovered that far from being the weakest link in the chain – as loudspeakers are so often described – the performance of the 808 warrants the best ancillary equipment available in order to realise its full potential.

While we cannot of course recommend specific equipment manufacturers, there is a wide range of top-quality components available. Since you have already invested in one of the world's finest speakers, you should therefore pay equal attention to your choice of pickup arm, cartridge, amplifier, tuner, tape recorder or CD player. Differences between them may be subtle but they do exist, and your own listening experience is an invaluable guide.

Because of its high power handling capability and protection circuits, no damage can result to your 808 system by using an adequately high-powered amplifier. This is preferred as it allows sufficient headroom for the high level of transient information available, and our minimum amplifier power recommendation is 200 rms per channel into 8 ohms. Reliable advice is always available from a reputable hi-fi

specialist, and our own specially-appointed B&W dealer will be pleased to give you expert assistance. Naturally, if it is possible to carry out a listening test in your home, using familiar recordings, this is the best way to ensure lasting satisfaction.

Fault Finding

Model 808 has been specifically designed to withstand high power levels. With the combination of APOC, ferrofluid tweeter, high temperature Kapton coils and polyester capacitors it is perhaps the world's most reliable loudspeaker and should give years of trouble-free service.

Service

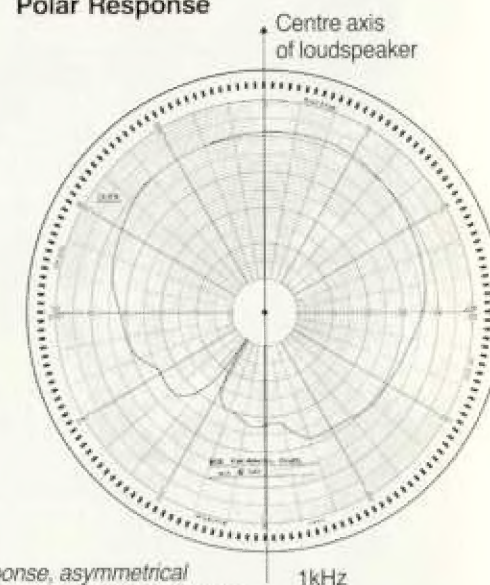
Throughout the world B&W Loudspeakers have appointed distributors who are responsible for service. Should you experience any difficulty, please contact the dealer from whom you purchased the loudspeakers.

Free-field Frequency Response



Taken in Europe's largest anechoic chamber at Garston, England.

Polar Response



Horizontal response, asymmetrical characteristic to enhance stereo imagery.

Specification

Frequency Response

30Hz to 20kHz ± 2 dB

Low Frequency System

Bass reflex employing two 300mm drive units;
Helmholtz box resonance 22Hz.

Midrange System

Acoustic line loading employing two 100mm units.

Bass Drivers: BT300

Diaphragm 270mm thermoplastic cone with PVA compound coating.
Ultra long throw suspension voice coil 50mm dia. high temperature Kapton magnet system 4.5kg ceramic.

This unit is a high power handling development of the bass unit used in 801.

Midrange Drivers: MT100

Diaphragm 100mm aromatic polyamide fibre matrix cone, critically formed and PVA impregnated following a laser interferometry computer-linked pattern.

Voice coil 26mm high temperature Kapton.

This unit is a high power handling version of the midrange unit used in 801.

High Frequency Driver: TX32

Diaphragm 32mm polyamide formed to a critical contour determined by computer-linked laser interferometry.

Coil, aluminium former with high power lead-out terminations and immersed in ferro fluid for state-of-the-art performance.

Magnet system, ferrite employing reversed field technology for increased flux.

Dispersion

Vertical: $+0, -1.5$ dB over 10° arc.
Horizontal: $+0, -2$ dB over 40° arc 20Hz – 15kHz.

Distortion:

	20Hz to 100Hz	100Hz to 20kHz
*100dB at 1m { 2nd Harmonic	1.00%	1.40%
{ 3rd Harmonic	1.00%	0.79%
*95dB at 1m { 2nd Harmonic	0.58%	0.64%
{ 3rd Harmonic	0.70%	0.50%

*Maximum % figures at each level.

Impedance

8ohms nominal, not less than 4ohms at any frequency.

Sensitivity

1 Watt into 8ohms load for a s.p.l. of 91dB at 1m. Sinewave input at 1kHz.

Power Handling

No upper limit on midrange and tweeter due to automatic protection circuits.

Bass 200W continuous sinewave below 400Hz.

Crossover

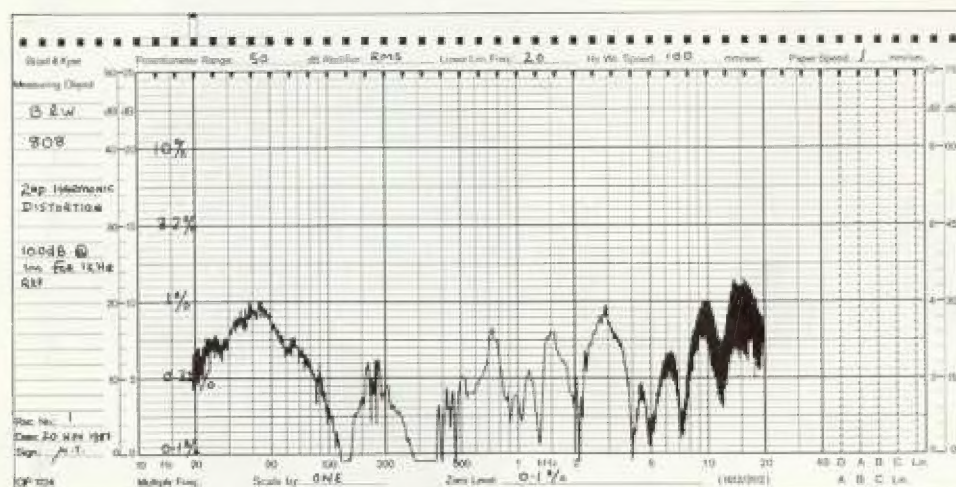
4th-order Butterworth squared configuration with crossover frequencies of 400Hz and 3kHz, with line delay correction between midrange and tweeter by means of an all-pass network.

Bi and triamping is made easy by separate terminals for each unit.
No electrolytic capacitors are used.

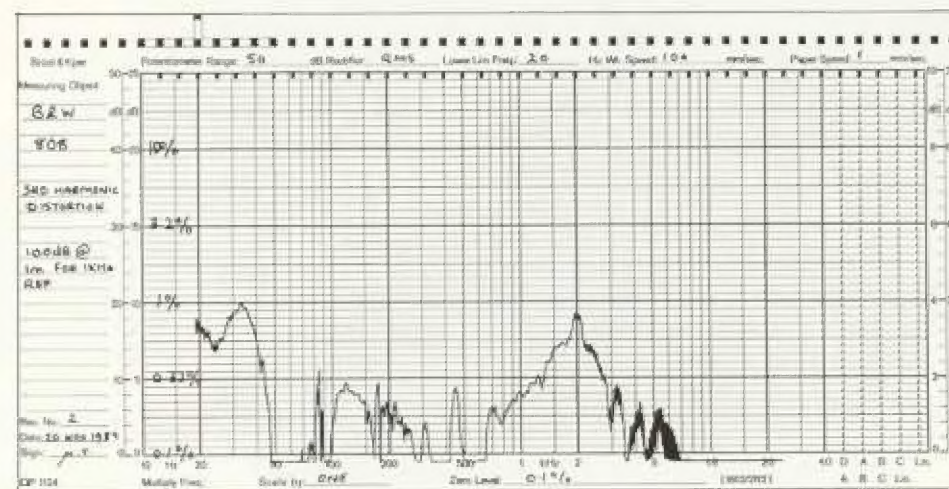
Dimensions

Height: 1050mm (41 1/4in); 1113mm (43 3/4in) with plinth.
1122mm (44 1/4in) with wheels and plinth.
Width: 653mm (25 3/4in).
Depth: 510mm (20in) without grille;
542mm (21 1/4in) with grille.
Weight: 78kg (180lb).

Harmonic Distortion



2nd harmonic distortion



3rd harmonic distortion